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ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is also included. (AG)

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TECHNICAL REPORT

ON

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

TELEPHONE DEPUTY (bus. ser.) 1-18.44

B-479 or S-206

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TM 001 219

U. S. Employment Service in
Cooperation with
California State Employment Service

December 1962

TECHNICAL REPORT

I. Purpose

This study was conducted to determine the best combination of aptitudes and minimum scores to be used as norms on the General Aptitude Test Battery for the occupation of Telephone Deputy 1-18.44.

II. Sample

The GATB, B-1002A, was administered during the period March 5 to May 27, 1960 to a sample of 63 female Telephone Deputies; 17 employed by Telephone Answering Service, 35 employed by Around-The-Clock Telephone Exchange, and 11 employed by Wilshire Business Service. These three employers are members of the Telephone Answering Services of California, Los Angeles, California. Seven tested workers were excluded from the sample on the basis of considerations regarding age, completion of training, or availability of valid criterion data. Those tested were chosen at random and seemed to be representative of the available worker group. The final sample consisted of 56 female Telephone Deputies.

Job applicants are required by all three employers to submit a written work application and are given a personal interview. There is no minimum age or educational requirement, although high school education is preferred and applicants must be able to speak, read and write English. Ability to operate a switchboard is preferred by two of the employers, but none of the employers require experience as Telephone Deputies. One month is considered an adequate training period for a worker who can operate a switchboard when hired, and an additional week of training for completely inexperienced workers. All workers in the sample are considered experienced workers.

TABLE I

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

N = 56	M	σ	Range	r
Age (years)	37.0	10.5	20-56	-.224
Education (years)	11.7	1.5	7-16	.028
Experience (months)	34.3	44.0	2-180	.193

The data in Table I indicate that there is no significant correlation between the criterion and the variables of age, education, or experience. Therefore, the sample is considered suitable for test development purposes.

GATB #2342

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

TELEPHONE DEPUTY (bus. ser.) 1-18.44

B-479 or S-206

Summary

The General Aptitude Test Battery, B-1002A, was administered to a final sample of 56 female Telephone Deputies 1-18.44, employed by three employer members of the Telephone Answering Services of California, Los Angeles, California. The criterion consisted of supervisory ratings on a descriptive rating scale. On the basis of mean scores, standard deviations, job analysis data, and their combined selective efficiency, Aptitudes V-Verbal, Q-Clerical and K-Motor Coordination were selected for inclusion in the final test norms.

GATB Norms for Telephone Deputy 1-18.44, B-479 or S-206

B-1001			B-1002		
Aptitude	Tests	Minimum Acceptable Aptitude Score	Aptitude	Tests	Minimum Acceptable Aptitude Score
V	CB-1-J	80	V	Part 4	80
Q	CB-1-B	90	Q	Part 1	90
T	CB-1-G CB-1-K	100	K	Part 8	100

Effectiveness of Norms

The data in Table IV indicate that 11 of the 18 poor workers, or 61 percent of them, did not achieve the minimum scores established as cutting scores on the recommended test norms. This shows that 61 percent of the poor workers would not have been hired if the recommended test norms had been used in the selection process. Moreover, 26 of the 33 workers who made qualifying test scores, or 79 percent, were good workers.

Replaces customer record card with message slips and location cards in pigeonhole or file. Key fronts together with paper clip. Places white-tipped flag with customer record card to indicate an undelivered message. Keeps customer record card in portable rack on directory shelf or between listening keys and makes continual effort to reach client between other calls, if message is urgent. Notifies supervisor when urgent messages accumulate or workload prevents frequent calls on urgent messages. Sets "Remind-O-Timer" by moving lever to dial so that bell will ring if reminder will be needed at time when client should be called.

Relays call: Obtains name and telephone number of caller. Informs caller that an attempt will be made to connect him with client. Closes talking key by pulling it forward with thumb and finger. Selects front cord of a pair not in use, opens corresponding talking key, plugs cord into trunk line jack and dials client's number. Gives client name and business of caller. Connects call, if so instructed by client, by either plugging back cord of each pair into jacks in "Telebridger", or by disconnecting front cord with which incoming call was answered and replacing it with back cord of pair used for connection with client. Records client's name, name of caller and other appropriate information on message slip. Time-stamps message slip, Monitors call by observing signal light on "Telebridger", or on switchboard panel over connecting cords or by periodically opening listening key to determine when call is completed. Disconnects call by manually pulling each of the cord plugs from jack with thumb and forefinger when light indicates call is completed. Replaces customer record card in proper pigeonhole or file. Files message slip in alphabetic file box. Takes message if client does not answer.

Receives call from client: Refers to customer record card, gives client information on message slips attached to customer record card. Records client's whereabouts and expected length of stay, if appropriate, on daily location card. Completes any special instruction forms needed, such as wake-up or "if" messages. Time-stamps all forms used and attaches to customer record card with paper clip. Files message slips on information relayed to client in alphabetic order in small portable file box. Records any changed or additional information for customer record card on a change of instruction form. Attaches form to customer record card and replaces customer record in pigeonhole or file with plastic flag of appropriate color for typist. Attaches magnetic disc to panel over jack or inserts plug in jack to indicate that client has given special instructions for temporary handling of calls, or that client cannot be reached for a certain period of time.

Occasionally relays calls by connecting to administrative lines: Plugs back cord of pair into administrative line station jack. Rings by pulling forward on ringing key. Monitors call by observing signal lights to make sure that party called has answered. Disconnects call by manually pulling each cord from jack with thumb and forefinger when call is completed.

III. Job Description

Job Title: Telephone Deputy (bus. ser.) 1-18.44

Job Summary:--Operates a single-position cord switchboard to provide an answering service for clients. Responds to incoming calls, obtains information to determine purpose of the calls, gives information and takes messages according to clients' instructions and established policies. Represents clients in answering inquiries and relaying information to callers. Relays calls and messages to clients. Makes detailed record of calls.

Work Performed.--Operates a single-position nonmultiple cord-operated switchboard to provide an answering service for clients: Puts on headset and takes seat on elevated chair in front of switchboard. Plugs end of card attached to headset into headset jack to establish connection with cord circuits of switchboard. Observes signal lights on switchboard panel indicating incoming calls and judges number of rings from length of time light is on or number of times light flashes. Determines from color of signal light or type of line the proper interval within which call must be answered.

Responds to call: Selects front cord of a pair not in use, plugs cord into jack over or under signal light on panel, pushes back talking key opposite connecting cord with thumb and finger, and speaks into transmitter. Refers to designation strip above jack to determine how to answer calls for individual client, and greets caller by announcing client's name, business, or telephone number. Selects customer record card from pigeonhole over switchboard panel or from file box according to number corresponding to number on designation strip, or by name of client, or refers to customer record card in Kardex file. Determines from customer record card and from daily location card or message slips attached, where calls can be relayed to client and what information may be given to callers. Asks pertinent questions to establish caller's identity and purpose of call, then handles call according to procedure suited to type of call and client's instructions.

Takes message: Informs caller that client is not in, gives permissible information regarding his whereabouts, obtains name and telephone number of caller, offers to take message. Records client's name, caller's name and telephone number, and other pertinent information on message slip. Disconnects call by manually pulling plug from jack with thumb and forefinger. Records date and time on message slip by inserting into automatic time-stamping machine under directory shelf or by inserting it into time-stamping machine attached to one side of switchboard above directory shelf and pressing down on top of machine with one hand. Records date by hand-stamping with rubber date stamp and writes time with pencil if switchboard is not equipped with time-stamping machine.

IV. Experimental Battery

All the tests of the GATB, B-1002A, were administered to the sample group.

V. Criterion

The criterion consisted of supervisory ratings made on a Descriptive Rating Scale tailored to the occupation. The ratings were made by the owner-operator of each business, who is the direct supervisor of the worker in each case. The rating scale consisted of eight items with five alternatives indicating the degree of performance for each item. Weights of one through five were assigned to each alternative so that the minimum possible total rating scale score was eight and the maximum forty. Second ratings were obtained from the same rater for each worker after a period of at least two weeks; the reliability coefficient for the two sets of ratings was .890. Therefore, the final criterion consisted of the sum of scores for the two sets of ratings; the distribution of scores ranged from 32 to 80 with a mean of 56.821 and a standard deviation of 13.797.

VI. Qualitative and Quantitative Analyses

A. Qualitative Analysis:

The job analysis indicated that the following aptitudes measured by the GATB appear to be important for this occupation:

G - Intelligence: required in order to read, understand, follow written instructions, interpret messages, and to make rapid decisions regarding information to be transmitted and action to be taken on callers' requests.

V - Verbal: required in order to converse with clients and callers to relay information clearly, and to understand inquiries and information received.

Q - Clerical Perception: required in order to accurately record names, numbers and instructions, to quickly locate customer record cards, and to accurately dial telephone numbers.

K - Motor Coordination: required in order to quickly respond to calls, to accurately place cord plugs into jacks, and to quickly remove and replace customer record cards.

F - Finger Dexterity and M - Manual Dexterity: required in order to quickly insert and remove cord plugs, to quickly remove and replace customer record cards, and to operate time-stamping machine or hand-stamp.

On the basis of the job analysis data, aptitude S - Spatial Aptitude is considered obviously unimportant for performing the duties of this job and is considered an "irrelevant" aptitude.

Relays messages to client: Removes customer record card and plastic flag from pigeonhole. Consults customer record card to ascertain where and when client can be reached. Selects front cord of a pair not in use, plugs cord into trunk line jack and dials client's number. Gives information to client regarding calls received and messages left, records on daily location card or on message slip any new instructions given by client. Disconnects line by manually pulling cord from jack with thumb and forefinger when call is completed. Time-stamps message slips and daily location card, if used, and files message slips no longer needed in alphabetic order in small portable file box. Attaches daily location card with paper clip to customer record card and replaces in pigeonhole. Time-stamps message slips, attaches to customer record card, and replaces in pigeonhole with plastic flag, if client does not answer.

VII. Validity of Norms (Concurrent)

The validity of the norms was determined by the tetrachoric correlation between the test norms and the criterion and applying the Chi Square test. The criterion was dichotomized by placing 32 percent of the sample in the low criterion group because this percent was considered to be the unsatisfactory or marginal workers.

Table IV shows the relationship between test norms consisting of Aptitudes V, Q and K with critical scores of 80, 90 and 100, respectively, and the dichotomized criterion for Telephone Deputy 1-18.44. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE IV

Validity of Test Norms for Telephone Deputy 1-18.44
(V-80, Q-90 and K-100)

N = 56	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	12	26	38
Poor Workers	11	7	18
Total	23	33	56

$r_{tet} = .45$ $\quad \chi^2 = 3.27$
$\sigma_{r_{tet}} = .22$ $\quad P/2 < .05$

The data in the above table indicate a significant relationship between the test norms and the criterion for the sample.

VIII. Conclusions

On the basis of the results of this study, Aptitudes V, Q and K with minimum scores of 80, 90 and 100, respectively, have been established as B-1002 norms for the occupation of Telephone Deputy 1-18.44. The equivalent B-1001 norms consist of V-80, Q-90, and T-100.

IX. Determination of Occupational Aptitude Pattern

The specific norms established for this study did not meet the requirements for allocation to any of the existing 35 OAP's (revised 10/61). The data for this sample will be considered for future groupings of occupations in the development of new occupational aptitude patterns.

B. Quantitative Analysis:

TABLE II

Means (M), Standard Deviations (σ), and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB; N = 56

Aptitudes	M	σ	r
G-Intelligence	98.0	14.4	.233
V-Verbal Aptitude	107.5	15.6	.093
N-Numerical Aptitude	94.8	13.4	.196
S-Spatial Aptitude	91.6	14.9	.160
P-Form Perception	99.8	16.2	.024
Q-Clerical Perception	110.1	17.0	.147
K-Motor Coordination	107.2	14.7	.160
F-Finger Dexterity	100.0	17.1	.123
M-Manual Dexterity	97.7	19.1	.078

C. Selection of Test Norms:

TABLE III

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important	X	X				X	X	X	X
Irrelevant				X					
Relatively High Mean		X				X	X		
Relatively Low Sigma	X		X	X			X		
Significant Correlation with Criterion									
Aptitudes to be Considered for Trial Norms	G	V				Q	K		

Trial norms consisting of various combinations of Aptitudes G, V, Q and K with appropriate cutting scores were evaluated against the criterion by the tetrachoric correlation technique. A comparison of the results showed that B-1002 norms consisting of V-80, Q-90 and K-100 had the best selective efficiency.